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PATENT APPLICATION

ATTORNEY DOCKET NO. 200314366-1IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Horn et al.

Confirmation No.: 3278

Application No.: 10/694,145

Examiner: Anh T N Vo

Filing Date: 10/27/2003

Group Art Unit: 2861

Title: FEATURES IN SUBSTRATES AND METHODS OF FORMING

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on June 28, 2007.The fee for filing this Appeal Brief is (37 CFR 1.17(c)) Fee Previously Paid
(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:☐ 1st Month
\$120☐ 2nd Month
\$450☐ 3rd Month
\$1020☐ 4th Month
\$1590☐ The extension fee has already been filed in this application.☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.Please charge to Deposit Account 08-2025 the sum of \$ 0. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees.☒ A duplicate copy of this transmittal letter is enclosed.☐ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
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Typed Name: Doreen Zabinski

Signature: Doreen Zabinski

Respectfully submitted,

Horn et al.

By Petar Kraguljac

Petar Kraguljac

Attorney/Agent for Applicant(s)

Reg No.: 38,520

Date: August 24, 2007

Telephone: (216) 348-5843

Rev 10/06a (ApBrief)

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Date of facsimile: August 24, 2007

Typed Name: Doreen Zabinski

Signature: Doreen Zabinski

Respectfully submitted,

Horn et al.

By Peter Kraguljac

Peter Kraguljac

Attorney/Agent for Applicant(s)

Reg No.: 38,520

Date: August 24, 2007

Telephone: (216) 348-5843

Rev 10/06a (Apl/Brief)

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PATENT**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:)	Examiner: Anh T N Vo
Horn et al.)	
Serial No.: 10/694,145)	Art Unit: 2861
Filed: October 27, 2003)	
For: FEATURES IN SUBSTRATES AND METHODS OF FORMING)	
Date of Office Action:)	Attorney Docket No.:
March 28, 2007)	200314366-1
Notice of Appeal Filed:)	
June 28, 2007)	
August 24, 2007)	

APPEAL BRIEF

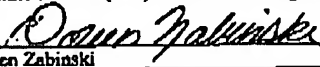
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is timely provided to support the Notice of Appeal filed June 28, 2007.

CERTIFICATE OF FACSIMILEDate of Deposit: August 24, 2007

I hereby certify that these papers are being transmitted to The United States Patent and Trademark Office
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Doreen Zabinski

(1268451:)

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1. Real Party in Interest:

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

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2. Related Appeals and Interferences

There are no other prior and/or pending appeals, interferences, or judicial proceedings that are related to, directly affect, or that will be directly affected by or have a bearing on the Board's decision.

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3. Status of Claims

Claims 6, 34-38 are pending in the application.

Claims 6, 34-38 stand rejected. All rejections are appealed.

Claims 1-5 and 7-33 were previously canceled in the application.

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4. Status of Amendments

No Amendments were filed subsequent to the Final Office Action.

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5. Summary of Claimed Subject Matter

Independent Claim 6

Independent claim 6 is directed to a fluid ejecting device. Claim 6 recites a substrate having a feature formed by a first process that removes substrate material from the substrate, the feature extending into the substrate and within the substrate along an axis, where a cross-section of the feature taken transverse the axis has an upper terminus proximate a first substrate surface, the upper terminus having a first profile. See, specification, Figs. 4a-4d, 5, 6, 6a, 7-7b, paragraphs [0034] (pages 10-11, lines 1-6) and [0038] (page 12, lines 1-7).

Claim 6 further recites where the upper terminus is formed to have a second profile different from the first profile by a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process and where the feature comprises a fluid-handling slot. See, specification Figs. 4e-4h, 5a, 6b, 7c-7d, paragraphs [0012] (page 4, lines 1-4), [0033] (page 10, lines 1-6), [0039] (page 12, lines 1-5) and [0050] (page 16, lines 1-8).

Independent Claim 34

Independent claim 34 is directed to a fluid-ejecting device. Claim 34 recites a substrate comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles. See, specification, Figs. 4a-4h and paragraphs [0033] (page 10, lines 1-6), [0036]-[0040] (page 11, line 1 – page 13, line 2), [0049] (page 16, lines 1-7) and [0050] (page 16, lines 1-8).

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Claim 34 further recites an orifice layer positioned over the first substrate surface, the orifice layer having multiple firing nozzles formed therein, at least some of the nozzles being in fluid flowing relation with the fluid-handling slot. (See, Fig. 3, paragraphs [0027] (page 8, lines 1-4), [0028] (pages 8-9, lines 1-11), [0030] (page 9, lines 1-10) and [0032] (page 10, lines 1-8)). Continuing, claim 34 recites wherein at least one of the first substrate surface and the second substrate surface being processed by at least one of the removal processes prior to the orifice layer being positioned over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles. (See, specification, paragraphs [0022] (page 6, lines 1-5) and [0048]-[0050] (page 15, line 1 - page 16, line 8)).

Independent Claim 38

Independent claim 38 is directed to a micro electro mechanical systems device. Claim 38 recites a substrate for supporting overlying layers. (See, specification, paragraph [0027] (page 8, lines 1-4)). Claim 38 further recites at least one feature formed in the substrate, the feature being formed with at least a first substrate removal process and a second different substrate removal process. (See, specification, paragraph [0033] (page 10, lines 1-6)).

Claim 38 also recites wherein the second different substrate removal process also removes debris created by the first substrate removal process. (See, specification, paragraph [0050] (page 16, lines 1-8)). Claim 38 further recites wherein the first substrate removal process comprises using a laser beam and the second substrate removal process comprises directing abrasive particles toward the substrate. (See, specification, paragraphs [0037] (page 11, lines 1-9) and [0040] (page 12, lines 1-6)).

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6. Grounds of Rejection to be Reviewed on Appeal

I. Whether Claim 6 is unpatentable under 35 USC 102(a) as being anticipated by Boyle et al. (Pub. No. U.S. 2002/0170891, serial no. 10/102,703).

II. Whether Claims 6 and 34-38 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Baughman et al. (U.S. Patent Number 5,608,436).

III. Whether Claims 6 and 34-38 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Hall et al. (U.S. Patent Number 6,902,867).

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7. Argument

I. Whether Claim 6 is unpatentable under 35 USC §102(a) as being anticipated by Boyle et al. (Pub. No. US 2002/0170891, S/N 10/102,703)

Independent claim 6

Claim 6 is directed to a fluid ejecting device and recites a substrate having a feature, which comprises a fluid-handling slot. The feature is formed by a first process and a second different process where the second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process. Boyle fails to teach these elements of the claim and thus fails to establish a prima facie anticipation rejection. The rejection should be reversed.

Boyle teaches laser machining to form a via. (Boyle, Abstract). Machining may be performed in multiple passes. (Boyle, Abstract). The Office Action relies upon Figures A-B and 1-2 of Boyle. Fig. A illustrates prior art accumulation of debris and molten material at a via outlet. (Boyle, paragraph 6). Typically, the debris cannot be removed by conventional washing techniques. (Boyle, paragraph 6).

Fig. B illustrates a three-step process in which a laser is used to machine a via structure with rough tapered walls. (Boyle, paragraph 12). The sidewalls are then cleaned in a second step. (Boyle, paragraph 12). Finally, an insulating layer is created on the internal via walls in the third step. (Boyle, paragraph 12). Thus, Boyle does not teach or suggest a second different process that removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process. The claim is not anticipated.

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The Office Action provides:

Noted that the limitations of the steps "a first process that removes substrate material from the substrate and a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process" are not given patentable weight since the claim is a product by process claim that is a product claim, the product-by-process claim is not limited to the manipulations of the recited steps, only the structure implied by the steps that are not evident and that the product itself does not depend on the process of making it... (Office Action at page 3).

Regarding product-by-process claims, MPEP §2113 provides:

The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)

The first process and second process recited in claim 6 impart distinctive structural characteristics to the final product. The first process forms a feature, a fluid-handling slot, by removing substrate material with a cross-section of the slot having an upper terminus having a first profile. The second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from the first profile and the second process also removes debris created by the first substrate removal process.

Since the recited manufacturing process steps (first process, second process) impart distinctive structural characteristics to the final product (e.g. the feature/slot, the modified profile of upper terminus, and cleans up debris), the structure implied by the process steps

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should be considered when assessing the patentability of product-by-process claims over the prior art. In fact in claim 6, the structure is not merely implied but explicitly recited. Therefore, the Examiner's reliance on MPEP §2113 to reject the claims is misplaced and the rejections are improper. As explained, Boyle does not teach or suggest the claimed fluid ejecting device and the recited elements, and MPEP §2113 does not cure the deficiencies of Boyle. Boyle does not teach a fluid ejecting device where the upper terminus is formed to have a second profile different from the first profile by a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process and where the feature comprises a fluid-handling slot as recited in independent claim 6. The claim is not anticipated.

Boyle fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 6 patentably distinguishes over the references of record and is in condition for allowance.

II. Whether Claims 6 and 34-38 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Baughman et al. (US Pat. 5,608,436)

The Office Action provides:

Noted that the limitations of the steps "a first process that removes substrate material from the substrate; a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process; where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles; wherein at least one of the first substrate surface and the second substrate surface being processed by at least one of the removal processes prior to the orifice layer being positioned over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles; where the fluid-handling slot is formed utilizing three distinct substrate removal processes; and wherein the fluid-handling slot is formed utilizing at least one substrate removal process directed at the first substrate surface and at least two different substrate removal processes directed at the second substrate

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surface" are not given patentable weight since the claims are product by process claims that are product claims, the product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps that are not evident and that the product itself does not depend on the process of making it...(Office Action at page 4).

As discussed in greater detail below, independent claims 6, 34 and 38 each recite processes which impart distinctive structural characteristics to the final product. Since the recited manufacturing process steps impart distinctive structural characteristics to the final product, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. Therefore, the Examiner's reliance on MPEP §2113 to reject the claims is misplaced and the rejections are improper.

Independent Claim 6

Claim 6 recites a feature (comprising a fluid-handling slot) formed by a first process and a second different process where the second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process. Baughman fails to teach these elements and thus fails to establish a prima facie anticipation rejection.

Baughman teaches an inkjet printer printhead having equalized shelf length. (Baughman, Title). The Office Action relies upon Figures 4A-6D as anticipating claim 6. (Office Action at page 3). These figures illustrate:

FIG. 4 is a cross-sectional view of the resistor configuration of FIG.3, showing the results of anisotropic etching of a <100> oriented silicon substrate;

FIG. 5 is a similar view as FIG. 4, but with a <110> oriented silicon substrate;

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FIG. 6 is a cross-sectional view equivalent to FIGS. 4 or 5 in which the ink-feed slot is produced by abrasive or laser micromachining; (Baughman, col. 3, lines 34-41).

Baughman does not teach or suggest a second different process that removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process.

As discussed above, the first process and second process recited in claim 6 impart distinctive structural characteristics to the final product. The first process forms a fluid-handling slot by removing substrate material with a cross-section of the slot having an upper terminus having a first profile. The second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from the first profile and the second process also removes debris created by the first substrate removal process.

Since the recited manufacturing process steps (first process, second process) impart distinctive structural characteristics to the final product, pursuant to MPEP §2113, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. In fact in the claim, the structure is not merely implied but explicitly recited. Therefore, the Examiner's reliance on MPEP §2113 to reject the claims is misplaced and the rejections are improper. Baughman does not teach or suggest a second different process that removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process as recited in independent claim 6.

Baughman thus fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 6 patentably distinguishes over the references of record and is in condition for allowance.

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Independent Claim 34

Claim 34 recites a substrate comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles. Claim 34 further recites a substrate surface processed by at least one of the removal processes prior to the orifice layer being positioned over the first substrate to reduce an incidence of debris occluding ink flow through individual nozzles. Baughman fails to teach these features and fails to establish a prima facie anticipation rejection. Thus, the rejection is improper and should be reversed.

Baughman fails to teach a fluid-ejecting device comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles.

The at least two substrate removal processes recited in claim 34 impart distinctive structural characteristics to the final product. Since the recited manufacturing process steps (at least two substrate removal processes) impart distinctive structural characteristics to the final product (e.g. a fluid-handling slot, at least one of the removal processes reduces incidence of debris occluding ink flow through individual nozzles), pursuant to MPEP §2113, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. In fact in the claim, the structure is not merely implied but explicitly recited. Therefore, the Examiner's reliance on MPEP §2113 to reject the claim is misplaced and the rejection is improper. Baughman does not teach or suggest these features.

Independent claim 34 recites a fluid-ejecting device comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two

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substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles. Baughman fails to teach or suggest this feature and thus fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 34 patentably distinguishes over the reference of record and is in condition for allowance.

Independent Claim 38

Claim 38 recites a micro electro mechanical systems device comprising a substrate for supporting overlying layers; and, at least one feature formed in the substrate, the feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process and wherein the first substrate removal process comprises using a laser beam and the second substrate removal process comprises directing abrasive particles toward the substrate. Baughman fails to teach these features and fails to establish a prima facie anticipation rejection. Thus, the rejection is improper and should be reversed.

Baughman fails to teach a feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process. The two substrate removal processes recited in claim 38 imparts distinctive structural characteristics to the final product. Since the recited manufacturing process steps (two substrate removal processes) impart distinctive structural characteristics to the final product (e.g., the second different substrate removal process also removes debris created by the first substrate removal process), pursuant to MPEP §2113, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. Therefore, the Examiner's reliance on MPEP §2113 to reject the claim is misplaced and the rejection is improper. Baughman does not teach or suggest these features.

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Independent claim 38 recites a feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process. Baughman fails to teach or suggest this feature and thus fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 38 patentably distinguishes over the references of record and is in condition for allowance.

III. Whether Claims 6 and 34-38 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Hall et al. (US Pat. 6,902,867)

Similar to the other rejections, these rejections also rely upon MPEP §2113. The Office Action provides:

Noted that the limitations of the steps "a first process that removes substrate material from the substrate; a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process; where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles; wherein at least one of the first substrate surface and the second substrate surface being processed by at least one of the removal processes prior to the orifice layer being positioned over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles; where the fluid-handling slot is formed utilizing three distinct substrate removal processes; and wherein the fluid-handling slot is formed utilizing at least one substrate removal process directed at the first substrate surface and at least two different substrate removal processes directed at the second substrate surface" are not given patentable weight since the claims are product by process claims that are product claims, the product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps that are not evident and that the product itself does not depend on the process of making it...(Office Action at page 5).

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As discussed in greater detail below, independent claims 6, 34 and 38 each recite processes which impart distinctive structural characteristics to the final product. Since the recited manufacturing process steps impart distinctive structural characteristics to the final product, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. Therefore, the Examiner's reliance on MPEP §2113 to reject the claims is misplaced. For at least this reason, the rejections are improper and cannot be sustained.

Independent Claim 6

Claim 6 is directed to a fluid ejecting device and recites a substrate having a feature, which comprises a fluid-handling slot. The feature is formed by a first process and a second different process where the second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process. Hall fails to teach these elements of the claim and thus fails to establish a prima facie anticipation rejection. The rejection should be reversed.

Hall teaches a method for making ink feed vias. (Hall, Abstract). The ink feed vias 14 are etched through the entire thickness of the semiconductor substrate 32 and are in fluid communication with ink supplied from an ink supply container, ink cartridge or remote ink supply. (Hall, col. 5, lines 7-9).

Hall does not teach or suggest a second different process that removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process.

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As discussed previously, the first process and second process recited in claim 6 impart distinctive structural characteristics to the final product. The first process forms a fluid-handling slot by removing substrate material with a cross-section of the slot having an upper terminus having a first profile. The second different process removes additional substrate material from the substrate to form an upper terminus having a second profile different from the first profile and the second process also removes debris created by the first substrate removal process.

Since the recited manufacturing process steps (first process, second process) impart distinctive structural characteristics to the final product (e.g. the feature/slot, the modified profile of upper terminus, and cleans up debris), pursuant to MPEP §2113, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. Therefore, the Examiner's reliance on MPEP §2113 to reject the claims is misplaced. Hall does not teach or suggest a second different process that removes additional substrate material from the substrate to form an upper terminus having a second profile different from a first profile and the second process also removes debris created by the first substrate removal process as recited in independent claim 6.

Hall fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 6 patentably distinguishes over the reference of record and is in condition for allowance.

Independent Claim 34

Claim 34 recites a substrate comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles. Claim 34 further recites a substrate surface processed by at least one of the removal processes prior to the orifice layer being positioned over the first substrate to reduce an incidence of debris

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occluding ink flow through individual nozzles. Hall fails to teach these features and fail to establish a prima facie anticipation rejection. The rejection is improper and cannot be sustained.

As discussed above, Hall teaches a method for making ink feed vias. (Hall, Abstract). The ink feed vias 14 are etched through the entire thickness of the semiconductor substrate 32 and are in fluid communication with ink supplied from an ink supply container, ink cartridge or remote ink supply. (Hall, col. 5, lines 7-9).

Hall fails to teach a fluid-ejecting device comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles. This has not be shown by the rejection.

The at least two substrate removal processes recited in claim 34 impart distinctive structural characteristics to the final product. Since the recited manufacturing process steps (at least two substrate removal processes) impart distinctive structural characteristics to the final product (e.g. a fluid-handling slot, at least one of the removal processes reduces incidence of debris occluding ink flow through individual nozzles), pursuant to MPEP §2113, the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art. Therefore, the Examiner's reliance on MPEP §2113 to reject the claim is misplaced.

Independent claim 34 recites a fluid-ejecting device comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles.

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Hall fails to teach or suggest this feature and thus fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 34 patentably distinguishes over the reference of record and is in condition for allowance.

Independent Claim 38

Claim 38 recites a micro electro mechanical systems device comprising a substrate for supporting overlying layers; and, at least one feature formed in the substrate, the feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process and wherein the first substrate removal process comprises using a laser beam and the second substrate removal process comprises directing abrasive particles toward the substrate. Hall fails to teach these features and fails to establish a prima facie anticipation rejection. Thus, claim 38 patentably distinguishes over the reference of record.

Hall teaches a method for making ink feed vias. (Hall, Abstract). Hall does not teach or suggest a first substrate removal process comprises using a laser beam and a second substrate removal process that comprises directing abrasive particles. Hall further does not teach or suggest the second substrate removal process also removes debris created by the first substrate removal process as recited in claim 38. Therefore, these limitations are not taught or suggested and Hall fails to support the rejection.

Hall fails to teach a feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process. The two substrate removal processes recited in claim 38 impart distinctive structural characteristics to the final product. Since the recited manufacturing process steps (two substrate removal processes) impart distinctive structural characteristics to the final product (e.g., the second different substrate removal process also removes debris created by the first substrate removal process), pursuant to MPEP §2113, the structure implied by the process

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steps should be considered when assessing the patentability of product-by-process claims over the prior art. Thus, the Examiner's reliance on MPEP §2113 to reject the claim is misplaced.

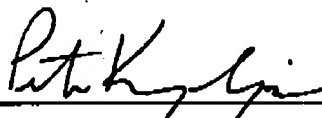
Independent claim 38 recites a feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process. Hall fails to teach or suggest this feature and thus fails to support a proper anticipation rejection. Therefore, the rejection is improper and should be reversed. Accordingly, claim 38 patentably distinguishes over the references of record and is in condition for allowance.

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Conclusion

For the reasons set forth above, a prima facie anticipation rejection has not been established for any claim. Thus, all rejections are improper and should be reversed. Accordingly, claims 6 and 34-38 patentably and unobviously distinguish over the references and are allowable. An early allowance of all claims is earnestly solicited.

Respectfully submitted,



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8. Claims Appendix

6. A fluid ejecting device comprising:

a substrate having a feature formed by a first process that removes substrate material from the substrate, the feature extending into the substrate and within the substrate along an axis, where a cross-section of the feature taken transverse the axis has an upper terminus proximate a first substrate surface, the upper terminus having a first profile; and,

where the upper terminus is formed to have a second profile different from the first profile by a second different process that removes additional substrate material from the substrate and also removes debris created by the first substrate removal process and where the feature comprises a fluid-handling slot.

34. A fluid-ejecting device comprising:

a substrate comprising at least a first substrate surface and a second substrate surface, a fluid-handling slot formed by at least two substrate removal processes and extending through the substrate between the first substrate surface and the second substrate surface, where the first substrate removal process comprises using a laser and the second substrate removal process comprises using abrasive particles; and,

an orifice layer positioned over the first substrate surface, the orifice layer having multiple firing nozzles formed therein, at least some of the nozzles being in fluid flowing relation with the fluid-handling slot, wherein at least one of the first substrate surface and the second substrate surface being processed by at least one of the removal processes prior to the orifice layer being positioned

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over the first substrate surface, at least in part, to reduce an incidence of debris occluding ink flow through individual nozzles.

35. The fluid-ejecting device of claim 34, wherein the fluid-handling slot is formed utilizing three distinct substrate removal processes.

36. The fluid-ejecting device of claim 34, wherein the fluid-handling slot is formed utilizing at least one substrate removal process directed at the first substrate surface and at least two different substrate removal processes directed at the second substrate surface.

37. A print cartridge comprising, at least in part, the fluid-ejecting device of claim 34.

38. A micro electro mechanical systems device comprising:

a substrate for supporting overlying layers; and,

at least one feature formed in the substrate, the feature being formed with at least a first substrate removal process and a second different substrate removal process, wherein the second different substrate removal process also removes debris created by the first substrate removal process and wherein the first substrate removal process comprises using a laser beam and the second substrate removal process comprises directing abrasive particles toward the substrate.

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9. Evidence Appendix

None. There is no extrinsic evidence.

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10. Related Proceedings Appendix

None. There are no related proceedings.